



## INDIANA DEPARTMENT OF TRANSPORTATION

### STANDARDS COMMITTEE MEETING MINUTES

#### *Driving Indiana's Economic Growth*

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November 20, 2006

#### MEMORANDUM

TO: Standards Committee

FROM: Anthony L. Uremovich, Acting Secretary

RE: Revised Minutes for the November 16, 2006 Standards Committee Meeting

The Standards Committee meeting was called to order by the Chairman at 9:00 a.m. on November 16, 2006 in the N755 Bay Window Conference Room. The meeting was adjourned at 12:00 p.m.

The following members were in attendance:

Mark Miller, Chairman	Dave Andrews, Pvmt. Engineering
Shakeel Baig, Crawfordsville Dist.	Bob Cales, Contract Admin.
Ron Heustis, Constr. Management	Jim Keefer, Ft. Wayne Dist.
Dennis Kuchler, State Constr. Engr.	Anne Rearick, Structural Services
Larry Rust, Traffic Control	Ron Walker, Materials Mgmt.
John Wright, Roadway Services	

Also in attendance were the following:

Tony Uremovich, Acting Secretary,	Lee Gallivan, FHWA
Jim Reilman, INDOT	Paul Berebitsky, ICI
Eric Carleton, Indep. Conc. Pipe	P. J. Hewitt, Contech
John Susong, Rinker Materials	Joe Rogers, Advanced Drainage
Doug Witten, Contech	Eric Wathen, Rinker Materials

#### Old Business

Item 16-1	Mr. Heustis	11/16/06	4
211	B BORROW <del>FILL</del> AND STRUCTURE	200-69	
	BACKFILL		
Action:	Passed as revised		
Item 16-6	Ms. Rearick	11/16/06	9
Policy Change	Semi-Integral End Bents		
Action:	Withdrawn		

Item 16-7 Design Manual Action:	Ms. Rearick Figures 67-1C(1) and 67-1C(2) Withdrawn	11/16/06	11
Item 16-8 702.02 Action:	Ms. Rearick Materials Withdrawn	11/16/06 700-17	12
Item 16-9 702.23 Action:	Ms. Rearick Waterproofing Withdrawn	11/16/06 700-42	13
Item 16-10 702.27 Action:	Ms. Rearick Method of Measurement Withdrawn	11/16/06 700-44	14
Item 16-11 702.28 Action:	Ms. Rearick Basis of Payment Withdrawn	11/16/06 700-44	15
Item 16-12 714.03.1 714.07 714.08 Action:	Mr. Heustis <i>Backfill</i> Method of Measurement Basis of Payment Passed as revised	11/16/06 700-102 700-104 700-104	16
Item 16-13 715.02 715.09 715.13 715.14 Action:	Mr. Heustis Materials Backfilling Method of Measurement Basis of Payment Passed as revised	11/16/06 700-105 700-111 700-113 700-114	18
Item 16-14 717.01 717.04 Action:	Mr. Heustis Description Backfill Passed as revised	11/16/06 700-121 700-123	21
Item 16-17 904.05 Action:	Mr. Heustis Structure Backfill Passed as submitted	11/16/06 900-35	23
Item 16-18 906.02(a)5 Action:	Ms. Rearick <i>Neoprene Sheeting</i> Withdrawn	11/16/06 900-40	24
Item 16-20 906.08 Action:	Ms. Rearick <i>High Density Plastic Bearing Strips</i> Withdrawn	11/16/06 900-43	25

New Business

Item 17-1 Standard Drawing Action:	Ms. Rearick 205-TECD-02 Passed as revised	11/16/06	26
Item 17-2 205.02 Action:	Ms. Rearick Materials Passed as submitted	11/16/06 200-49	29

Item 17-3	Mr. Heustis	11/16/06	30
Standard Drawings	715-BKFL 01 thru 10		
Action:	Passed as submitted		
Item 17-4	Mr. Cales	11/16/06	41
203.08	Borrow or Disposal	200-21	
Action:	Passed as revised		
Item 17-5	Mr. Kuchler	11/16/06	42
108.08	Determination and Extension of		
	Contract Time	100-76	
Action:	Passed as submitted		

**The December 21<sup>st</sup> Standards Committee meeting has been cancelled. The next scheduled meeting is January 18, 2007.**

cc: Committee Members (11)  
 FHWA (4)  
 ICI Representative (1)

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 211, BEGIN LINE 1, DELETE AND INSERT AS FOLLOWS:

**SECTION 211 – B BORROW ~~FILL~~ AND STRUCTURE BACKFILL**

**211.01 Description**

This work shall consist of backfilling excavated or displaced peat deposits; filling up to designated elevations of spaces excavated for structures and not occupied by permanent work; constructing bridge approach embankment; and filling over structures and over arches between spandrel walls, all with special material.

**MATERIALS**

**211.02 Materials**

Materials shall be in accordance with the following.

B Borrow .....	As Defined*
Geotextile .....	918.02
Structure Backfill .....	904

- \* The material used for special filling shall be of acceptable quality, free from large or frozen lumps, wood, or other extraneous matter and shall be known as B borrow. It shall consist of suitable sand, gravel, crushed stone, ACBF, GBF, or other approved material. The material shall contain no more than 10% passing the No. 200 (75 µm) sieve and shall be otherwise suitably graded. The use of an essentially one-size material will not be permitted unless approved.

*Aggregate for end bent backfill shall be No. 8 or No. 9 crushed stone or ACBF, class D or higher.*

The Contractor has the option of either providing B borrow or structure backfill from an established CAPP source, or supplying the material from another source. The Contractor has the following options for supplying B borrow or structure backfill from a local site:

- (a) the establishment of a CAPP Producer Yard at the local site in accordance with 917; or
- (b) use a CAPP Certified Aggregate Technician or a consultant on the Department's list of approved Geotechnical Consultants For Gradation Control Testing.

For material excavated within the project limits, gradation control testing will be performed by the Department if the Contractor is directed to use the material as B borrow or as structure backfill.

The frequency of gradation control testing shall be one test per 2000 t (2000 Mg) based on production samples into a stockpile or by over the scales measurement, with a minimum of two tests per contract (one in the beginning and one near the mid-point). The sampling and testing of these materials shall be in accordance with applicable requirements of 904 for fine and coarse aggregates. The Contractor shall advise, in

writing, the Engineer and the District Materials and Testing Engineer of the plan to measure the material.

~~When~~ *Where* structure backfill is specified, the Contractor may substitute flowable backfill in accordance with 213. However, flowable backfill shall not be placed into or through standing water, unless approved in writing.

## **CONSTRUCTION REQUIREMENTS**

### **211.03 General Requirements**

If B borrow or structure backfill is obtained from borrow areas, the items of obtaining the areas, their locations, depths, drainage, and final finish shall be in accordance with 203.

Unless otherwise specified, if excavated material complies with 211.02 and if B borrow or structure backfill is required for special filling, the excavated material shall be used as such. If there is a surplus of this material, such surplus shall be used in embankment. The provisions of 203.19 shall apply to placing this material at structures. All surplus in excess of the directed or specified use on the right-of-way shall be disposed of in accordance with 201.03.

If fill or backfill as described in this specification is within embankment limits, and if it is not required that the entire fill or backfill be of B borrow and placed as such, then that portion above the free-water level shall be placed in accordance with applicable provisions of 203 and compacted to the required density.

If borrow is required outside the specified limits of B borrow, material in accordance with the specifications for B borrow may be furnished at the contract unit price for borrow; however, the quantity of borrow measured for payment outside the limits of structure backfill will not exceed the theoretical quantity of B borrow furnished.

Unless otherwise specified, all spaces excavated for and not occupied by bridge abutments and piers, if within embankment limits, shall be backfilled to the original ground line with B borrow, and placed in accordance with 211.04.

Where B borrow or structure backfill is required as backfill at culverts, retaining walls, sewers, manholes, catch basins, and other miscellaneous structures, it shall be compacted in accordance with 211.04.

*Where specified, aggregate for end bent backfill shall be placed behind end bents and compacted in accordance with 211.04. Prior to placing the aggregate, a geotextile shall be installed in accordance with 616.11.*

### **211.04 Mechanical Compaction**

~~Where B borrow or and structure backfill is to shall be compacted by mechanical compaction, it shall, unless otherwise specified, be placed with mechanical tamps or vibrators in accordance with the applicable provisions of 203.23 except, if mechanical tamps or vibrators are used, the material shall be deposited in approximately 6 in. (150 mm) lifts, loose measurements, and each lift compacted to density requirements except as otherwise set out herein.~~

*Aggregate for end bent backfill and coarse aggregate No. 8, No. 9, or No. 11 used for structure backfill shall be deposited in layers not to exceed 12 in. (300 mm) loose measurement. Each layer shall be mechanically compacted with a compactor having a plate width of 17 in. (425 mm) or larger that delivers 3000 to 9000 lb (13.3 to 40 kN) per blow. Each lift shall be compacted with two passes of the compactor.*

#### **211.05 Embankment for Bridges**

When special filling is required, the embankment for bridges shall be constructed using B borrow within the specified limits shown on the plans. All embankment construction details specifically set out in this specification for embankment for bridges shall be considered in accordance with the applicable requirements of 203.

At the time B borrow is being placed for approach embankment, a well compacted watertight dam shall be constructed in level lifts, the details of which are shown on the plans. Except as hereinafter specified for material to be used in constructing the enclosing dam, and for growing vegetation, and unless otherwise provided, the material for constructing bridge approach embankment shall be B borrow compacted by mechanical methods. If approach embankment or shoulders are constructed of material not suitable for growing seed or sod, and if one or both of these is required, then such areas shall, unless otherwise specified, be covered with a layer of clay, loam, or other approved material. This layer shall be approximately 1 ft (0.3 m) thick after being compacted into place.

#### **211.06 B Borrow Around Bents**

When specified, B borrow shall be placed around all bents falling within the limits of the approach grade as shown on the plans. Before placing, the surface of the ground on which it is to be placed shall be scarified or plowed as directed. The embankment slope shall be 2:1 on the sides and beneath the structure, and shall be 6:1 from the end of the bridge down to the average ground line, or it may be required to complete the approaches back to the existing grade. An enclosing dam and provisions for growing vegetation shall be constructed in accordance with 211.05.

#### **~~211.07 Aggregate For End Bent Backfill Blank~~**

~~When specified, coarse aggregate shall be placed behind end bents as shown on the plans. The material shall be deposited in lifts not to exceed 12 in. (300 mm) loose measurement, and each lift shall be mechanically compacted using a hand held vibratory plate compactor having a plate width of 17 in. (425 mm) or larger that delivers 3000 to 9000 lb (13.3 to 40 kN) per blow. Each lift shall be compacted with two passes of the compactor.~~

~~Prior to placing the aggregate, a geotextile shall be installed in accordance with 616.11.~~

#### **211.08 Spandrel Filling**

Unless otherwise specified, spandrel fills for arch structures shall be composed of B borrow. The fill shall be carried up symmetrically in lifts from haunch to crown and simultaneously over all piers, abutments, and arch rings. Compaction shall be in accordance with 211.04.

### **211.09 Method of Measurement**

B borrow, structure backfill and aggregate for end bent backfill will be measured by the cubic yard (cubic meter) as computed from the neat line limits shown on the plans, or as adjusted. If cubic yards (cubic meters) are set out as the pay item for B borrow or structure backfill in the Schedule of Pay Items and if neat line limits are not specified for measurement of volume for the material, measurement will be made by the cubic yard (cubic meter) at the loading point in truck beds which have been measured, stenciled, and approved. The B borrow may be weighed and converted to cubic yards (cubic meters) by assuming the weight per cubic foot (mass per cubic meter) to be 90% of the maximum wet density in accordance with AASHTO T 99. The material may be cross sectioned in its original position and again after excavation is complete, and the volume computed by the average end area method. If B borrow is used for backfill in areas where unsuitable material is present or peat excavation has been performed, unless otherwise directed, the B borrow will be cross sectioned, and the volume will be computed by the average end area method.

If the material is to be paid for by the ton (megagram), it will be weighed in accordance with 109.01(b).

If the material comes from a wet source such as below water or a washing plant, and weighing is involved in the method of measurement, there shall be a 12 h drainage period prior to the weighing.

Geotextile will be measured in accordance with 616.12.

### **211.10 Basis of Payment**

The accepted quantities of B borrow will be paid for at the contract unit price per cubic yard (cubic meter) or per ton (megagram) as specified, complete in place.

Structure backfill will be paid for at the contract unit price per cubic yard (cubic meter), based on the neat line limits shown on the plans or as adjusted for authorized changes, provided the material comes from outside the permanent right-of-way. If the Schedule of Pay Items does not contain a pay item for structure backfill and it is required to backfill pipes or culverts within the project limits, a change order will be generated to establish a unit price.

B borrow material placed outside the neat lines will be paid for as borrow when such B borrow eliminates required borrow material. Otherwise, no payment will be made for backfill material placed outside the neat lines.

Aggregate for end bent backfill will be paid for at the contract unit price per cubic yard (cubic meter), based on the neat line limits shown on the plans or as adjusted by authorized changes.

Geotextile will be paid for in accordance with 616.13.

Flowable backfill which is substituted for structure backfill will be paid for as structure backfill.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 211, CONTINUED.

If topsoil, loam, or other suitable material in accordance with 211.05 is used for expediting the growth of seed or sod, it will be paid for at the contract unit price per cubic yard (cubic meter) for borrow, unless otherwise provided.

Payment will be made under the following:

Pay Item	Pay Unit Symbol
Aggregate For End Bent Backfill.....	CYS (m3)
B Borrow .....	CYS (m3)
	TON (Mg)
Structure Backfill .....	CYS (m3)

No payment will be made under this section for material obtained within the excavation limits of the project if the Contractor is directed to use the material as B borrow or structure backfill in a pipe trench, culvert, construction of an embankment or fill, or if the Contractor uses the material for its own convenience. Material obtained from within the excavation limits of the project and which the Contractor is directed to use as B borrow or structure backfill for other purposes including replacement of undercut areas, support for a MSE wall, and end bent fill will be paid for at the contract unit price of \$5.00 per cubic yard (\$6.50 per cubic meter) for B borrow/structure backfill handling.

The cost of disposal of excavated material shall be included in the cost of the pay items in this section.

Other sections containing specific cross references:		General Instructions to Field Employees	
		Update Required? Y___ N_ <u>x</u> ___	
		By - Addition or Revision	
202.08 Pg 200-10	621.13 Pg 600-69	Frequency Manual	
202.09 Pg 200-13	714.07 Pg 700-104	Update Required? Y___ N_ <u>x</u> ___	
202.14 Pg 200-15	714.08 Pg 700-104	By - Addition or Revision	
203.09 Pg 200-23 (3)	715.02 Pg 700-105		
203.16 Pg 200-29	715.04 Pg 700-109	718.10 Pg 700-128	
203.27(b) Pg 200-38	715.09 Pg 700-111	719.07 Pg 700-130	
203.27(e) Pg 200-39	715.13 Pg 700-113	719.08 Pg 700-131	
203.27(f) Pg 200-40 (3)	715.14 Pg 700-114	720.03 Pg 700-134 (2)	
204.02 Pg 200-44	717.04 Pg 700-123	802.11 Pg 800-28	
204.03 Pg 200-45	717.08 Pg 700-124	802.12 Pg 800-29	
206.07 Pg 200-55 (2)	717.09 Pg 700-124	807.05 Pg 800-50	
212.02 Pg 200-74	718.09 Pg 700-127	904.01 Pg 900-25	
Recurring Special Provisions potentially affected:		Standard Sheets potentially affected:	
714-R-437	723-R-282	715-BKFL-01 thru 12	
717-R-152	723-R-282f		
Motion: Mr. Heustis		Action: Passed as revised	
Second: Mr. Walker		Effective: March 2007 Letting	
Ayes: 9		<u>x</u> 2008 Standards Specifications Book	
Nays: 0		____ 2008 Standards Edition	

Received FHWA Approval? Yes



POLICY CHANGE

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Semi-Integral End Bents

Revises Indiana Design Manual Section 67-1.01

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Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

None

Standard Sheets potentially affected:

None

Motion: M

Second: M

Ayes:

Nays:

Action: Withdrawn. Will be resubmitted.

**DESIGN MEMORANDUM No. 06-\_\_**  
**POLICY CHANGE**

**TO:** All Design, Operations, and District Personnel, and Consultants

**FROM:** \_\_\_\_\_  
Anthony L. Uremovich  
Design Resources Engineer  
Production Management Division

**SUBJECT:** Semi-Integral End Bents

**REVISES:** *Indiana Design Manual Section 67-1.01*

**EFFECTIVE:** \_\_\_\_\_, 2006, Letting

Semi-integral end bents should be considered for each bridge for which integral end bents are not practical or feasible. For a skew angle of greater than 30 deg or an expansion length of 250 ft (80 m) or longer, twisting or racking of the bridge should be investigated.

*Indiana Design Manual* Figure 67-1C(1) shows details for Method 1, and Figure 67-1C(2) shows details for Method 2. Both figures are attached hereto. All applicable information shown in the figures should be shown on the plans.

Recurring Special Provision 702-B-\_\_\_\_, attached hereto and regarding plastic bearing strip, and neoprene sheeting, materials required in the construction of semi-integral end bents, should be called for beginning with the \_\_\_\_\_, 2007, letting, and through the \_\_\_\_\_, 2007, letting. Beginning with the September \_\_, 2007, letting, the recurring special provision will be incorporated into the INDOT *Standard Specifications*. The provision will then no longer be required to be called for in specific contracts.

Item No. 16-7  
Ms. Rearick  
Date: 11/16/06

REVISION TO DESIGN MANUAL

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FIGURES 67-1C(1) Suggested Semi-Integral End Bent Details (Method 1)

FIGURES 67-1C(2) Suggested Semi-Integral End Bent Details (Method 2)

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Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

None

Standard Sheets potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

Action: Withdrawn. Will be resubmitted.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 702, AFTER LINE 43, INSERT AS FOLLOWS:

*High Density Plastic Bearing Strips* .....906.08  
*Neoprene Sheeting* .....906.02(a)5

Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

Standard Sheets potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

Action: Withdrawn. Will be resubmitted.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 702, AFTER LINE 1270, INSERT AS FOLLOWS:

*Where semi-integral end bents are constructed, a neoprene sheet with nylon fabric reinforcement shall be installed as shown on the plans. The neoprene shall be secured to the concrete with approved pneumatically placed fastening devices which will not damage the neoprene or the concrete. The neoprene sheet shall be centered on the joints. Laps shall not be incorporated into the vertically installed neoprene sheeting.*

Other sections containing  
specific cross references:

203.19 Pg 200-32  
714.03 Pg 700-103

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

None

Standard Sheets potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

Action: Withdrawn. Will be resubmitted.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 702, AFTER LINE 1374, INSERT AS FOLLOWS:

*Neoprene sheeting and all materials required for installation of the sheeting will not be measured.*

*High density plastic bearing strips will not be measured.*

Other sections containing  
specific cross references:

704.07 Pg 700-53  
714.07 Pg 700-104  
717.08 Pg 700-124

Recurring Special Provisions  
potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Standard Sheets potentially affected:

None

Action: Withdrawn. Will be resubmitted.

REVISION TO 2006 STANDARD SPECIFICATIONS

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SECTION 702, AFTER LINE 1454, INSERT AS FOLLOWS:

*The cost of furnishing and installing neoprene sheeting shall be included in the cost of concrete, class A.*

*The cost of high density plastic bearing strips shall be included in the cost of concrete, class A.*

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Other sections containing  
specific cross references:

206.11 Pg 200-58  
704.08 Pg 700-53  
714.08 Pg 700-104

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

Standard Sheets potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

Action: Withdrawn. Will be resubmitted.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 714, AFTER LINE 37, INSERT AS FOLLOWS:

**714.03.1 Backfill**

*Structure backfill or flowable backfill shall be used as backfill around concrete culverts. Backfill shall be placed in accordance with 211 or 213 as applicable.*

SECTION 714, BEGIN LINE 86, INSERT AS FOLLOWS:

**714.07 Method of Measurement**

Concrete used in retaining walls, culverts, and culvert extensions will be measured in accordance with 702.27. Reinforcing steel will be measured in accordance with 703.07. Precast reinforced concrete box sections and precast reinforced concrete box section extensions will be measured by the linear foot (meter), complete in place. *Common excavation for retaining walls will be measured by the cubic yard (cubic meter) to the neat lines shown on the plans.* Structure backfill and B borrow for retaining walls will be measured in accordance with 211.09 to the neat lines shown on the plans. *Structure backfill for drainage structures will be measured in accordance with 211.09.* Flowable backfill will be measured in accordance with 213.08. Field drilled holes will be measured in accordance with 702.27.

**714.08 Basis of Payment**

The accepted quantities of concrete used in retaining walls, culverts, and culvert extensions will be paid for at the contract unit price per cubic yard (cubic meter) for concrete, of the class specified, structures. Reinforcing steel will be paid for in accordance with 703.08. Precast reinforced concrete box sections will be paid for at the contract unit price per linear foot (meter) for culvert, precast reinforced concrete box sections, of the size specified, complete in place. Precast reinforced concrete box section extensions will be paid for at the contract unit price per linear foot (meter) for culvert extension, precast reinforced concrete box sections, of the size specified, complete in place. *Common excavation for retaining walls will be paid for at the contract unit price per cubic yard (cubic meter) to the neat lines in accordance with 203.28.* Structure backfill and B borrow for retaining walls will be paid for in accordance with 211.10. *Structure backfill for drainage structures will be paid for in accordance with 211.10.* Where used as a substitute for structure backfill, flowable backfill will be paid for as structure backfill. Where specified for backfill, flowable backfill will be paid for in accordance with 213.09. Field drilled holes will be paid for in accordance with 702.28.



REVISION TO 2006 STANDARD SPECIFICATIONS  
SECTION 714 CONTINUED.

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Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_x\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_x\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

714-R-437

717-R-152

723-R-228

723-R-228f

Standard Sheets potentially affected:

715-BKFL-01 thru 12

Motion: Mr. Heustis

Second: Mr. Kuchler

Ayes: 10

Nays: 0

Action: Passed as revised

Effective: March 2007 Letting

  x   2008 Standards Specifications Book

      2008 Standards Edition

Received FHWA Approval? Yes

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 715, AFTER LINE 27, INSERT AS FOLLOWS:

Concrete .....	702
Flowable Backfill .....	213
Geotextiles .....	918.02
Reinforcing Steel .....	910.01
Rubber Type Gaskets .....	906.04
Straps, Hook Bolts, and Nuts .....	908.12
Structure Backfill .....	904

*The maximum particle size of backfill material for corrugated pipe shall be less than one-half the corrugation depth.*

SECTION 715, BEGIN LINE 287, DELETE AND INSERT AS FOLLOWS:

**715.09 Backfilling**

All plastic pipes, ~~except longitudinal underdrains, which are not fabricated with hydrostatic design basis rated resins and are installed within 5 ft (1.5 m) of mainline or public road approach pavement, paved shoulders, or sidewalks~~ shall be backfilled with *structure backfill* or flowable backfill. *Structure backfill shall be placed in accordance with 211.* Flowable backfill shall be placed in accordance with 213.07. ~~All other pipe installations shall be backfilled as shown on the plans or as directed. Structure backfill shall be placed in accordance with 211.04.~~

Prior to placing flowable backfill, all standing water shall be removed from the trench. If the water cannot be removed from the trench, structure backfill shall be used in lieu of flowable backfill to an elevation 2 ft (0.6 m) above the groundwater. The remainder of the trench shall be backfilled as shown on the plans.

~~Except where prohibited due to groundwater, flowable backfill may be used as a substitute for structure backfill.~~

~~After the completion of the backfill operation and prior to beginning the paving operation, all plastic pipes, except longitudinal underdrains, not fabricated with hydrostatic design basis rated resins installed within 5 ft (1.5 m) of mainline or public road approach pavement, paved shoulders, or sidewalks~~ All pipes, *except underdrains, shall will be mandrel tested* visually inspected for acceptance a minimum of 30 days after the completion of backfill operations. Pipes that cannot be visually inspected shall be video inspected for acceptance in accordance with 718.07. The Engineer will determine the sections of pipe to be video inspected.

*After the visual or video inspection, all polyethylene and smooth wall polyvinyl chloride pipes 36 in. (900 mm) or less in pipe pay item diameter shall be mandrel tested.* The mandrel shall be a go/no go mandrel with a minimum of nine arms or prongs and a diameter of 5% less than the pipe pay item diameter. If the mandrel does not pass through the pipe when pulled by hand or the mandrel damages the pipe, the deficient pipe shall be removed, replaced, and mandrel tested a minimum of 30 days after the ~~flowable~~ backfill has been replaced.

*Commercial and private drive pipes are excluded from the mandrel testing and video inspection requirements.*

Where material other than structure backfill or flowable backfill is permitted and used for backfilling, it shall be of such nature that compacts readily. That portion around and for 6 in. (150 mm) above the top of the pipe shall be free from large stones. This material shall be placed in layers not to exceed 6 in. (150 mm), loose measurement, and each layer compacted thoroughly by means of mechanical tamps. *Where coarse aggregate No. 8, No. 9, or No. 11 is used for structure backfill, geotextile shall be installed.*

An adequate earth cover, as shown on the plans, shall be placed over the structure before heavy equipment is ~~driven~~ *operated* over it.

Backfill for slotted drain pipe and slotted vane drain pipe shall consist of class A concrete on both sides of the pipe. During the backfilling and paving operations, the slot shall be covered to prevent infiltration of material into the pipe.

SECTION 715, BEGIN LINE 408, INSERT AS FOLLOWS:

Structure backfill will be measured in accordance with 211.09. Flowable backfill will be measured in accordance with 213.08.

Pavement replacement and subbase necessary due to structure replacement under an existing pavement will be measured to the neat lines shown on the plans.

For structures for which the plans permit pipes of differing sizes for either smooth or corrugated interiors, and the corrugated interior alternate is installed, measurement of ~~B-borrow for~~ structure backfill or flowable ~~mortar~~ backfill will be based on the neat line dimensions shown on the plans for the smooth interior alternate.

Grated box end sections will be measured per each for the specified type, surface slope, and pipe size.

*Video inspection for pipe will be measured by the linear foot (meter) as determined by the electronic equipment.*

*Mandrel testing of polyethylene and smooth wall polyvinyl chloride pipes 36 in. (900 mm) or less in pipe pay item diameter will not be measured for payment.*

*Geotextile used to wrap backfill material will not be measured for payment.*

SECTION 715, AFTER LINE 439, INSERT AS FOLLOWS:

*Structure backfill will be paid for in accordance with 211.10. Where used as a substitute for structure backfill, flowable backfill will be paid for as structure backfill. When specified for pipe backfill, flowable backfill will be paid for in accordance with 213.09.*

SECTION 715, AFTER LINE 461, INSERT AS FOLLOWS:

*Video inspections for pipe will be paid for at the contract unit price per linear foot (meter) completed.*

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 715, AFTER LINE 562, INSERT AS FOLLOWS:

*Video Inspection for Pipe..... LFT (m)*

SECTION 715, AFTER LINE 592, INSERT AS FOLLOWS:

*Geotextile required for coarse aggregate No. 8, No. 9, or No. 11 structure backfill material will not be paid for separately. The cost of the geotextile shall be included in the cost of structure backfill.*

*The cost of providing the video inspection equipment, technician, videotapes, or computer disks shall be included in the cost of the video inspection for pipe. No additional payment will be made for repair or removal of pipes, backfill, the video re-inspection of the repairs or replaced pipe, and all other work associated with the repair or removal of unaccepted pipes.*

Other Section Containing specific cross references

205.02, Pg. 200-49  
205.06, Pg. 200-51  
205.07, Pg. 200-52  
717.02, Pg. 700-121  
717.08, Pg. 700-124  
717.09, Pg 700-124  
718.09, Pg 700-127  
718.10, Pg 700-127  
719.02, Pg 700-129  
719.04, Pg 700-130  
719.05, Pg 700-130  
719.07, Pg 700-130  
719.08, Pg 700-130

Other sections containing  
specific cross references:

See Above

General Instructions to Field Employees

Update Required? Y x N    

By - Addition or Revision

Frequency Manual

Update Required? Y     N x

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

714-R-437  
717-R-152  
723-R-282  
723-R-282f

Standard Sheets potentially affected:

211-BFIL-01 thru 05  
714-BCEX-01 and 02  
715-BKFL-01 thru 12

Motion: Mr. Heustis  
Second: Mr. Kuchler  
Ayes: 10  
Nays: 0

Action: Passed as revised  
Effective: March 2007 Letting  
  x   2008 Standards Specifications Book  
      2008 Standards Edition

Received FHWA Approval? Yes

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 717, BEGIN LINE 3, DELETE AND INSERT AS FOLLOWS:

**717.01 Description**

This work shall consist of furnishing and placing structural plate pipe, pipe-arches, or arches in accordance with ~~these specifications and in reasonably close conformance with the lines, grades, and details shown on the plans or as directed~~ 105.03.

SECTION 717, BEGIN LINE 81, DELETE AND INSERT AS FOLLOWS:

**717.04 Backfill**

~~Where shown on the plans or when directed, All structural plate pipe and pipe arches shall be backfilled with structure backfill or flowable backfill shall be used in backfilling around pipe and pipe arch structures.~~ Arch structure backfill shall be structure backfill. The amount of camber on the invert of the pipe or pipe-arch shall be varied to suit the height of fill and supporting soil, except the camber grade shall not be above level. ~~The finished backfill grade shall be as shown on the plans.~~ *Structure backfill shall be placed in accordance with 211. Flowable backfill shall be placed in accordance with 213.*

~~After the pipe or pipe arch has been assembled and is in place, backfill material shall be placed in accordance with 211.04 or 213.07.~~

An adequate earth cover shall be provided over the structure, as shown on the plans, before heavy construction equipment is ~~driven~~ *operated* over it. This earth cover shall be free of stones.

~~When~~ *Where* backfilling at arches before headwalls are placed, the material shall first be placed midway between the ends of the arch, forming as narrow a ramp as possible, until the top of the arch is reached. The ramp shall be built up evenly on both sides and the backfilling material compacted as it is placed. After both ramps have been built to the top of the arch, the remainder of the backfill shall be deposited in both directions from the center to the ends and evenly on both sides of the arch.

SECTION 717, BEGIN LINE 160, DELETE AND INSERT AS FOLLOWS:

~~Flowable~~ *Where used as a substitute for structure backfill, flowable backfill will be paid for as structure backfill. Where specified for backfill, flowable backfill will be paid for in accordance with 213.09.*

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 717 CONTINUED.

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Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_x\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_x\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

714-R-437

717-R-152

723-R-282

723-R-282f

Standard Sheets potentially affected:

211-BFIL-01 thru 05

714-BCEX-01 and 02

715-BKFL-01 thru 12

Motion: Mr. Heustis

Second: Mr. Kuchler

Ayes: 10

Nays: 0

Action: Passed as revised

Effective: March 2007 Letting

  x   2008 Standards Specifications Book

       2008 Standards Edition

Received FHWA Approval? Yes

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 904, BEGIN LINE 360, DELETE AND INSERT AS FOLLOWS:

**904.05 Structure Backfill**

The material shall be of acceptable quality, free from large or frozen lumps, wood, or other extraneous matter. It shall consist of suitable sand, gravel, crushed stone, ACBF, or GBF. ~~Coarse aggregate used for backfilling end bents on beam structures shall be No. 8 or No. 9 crushed stone or BF slag, class D or higher, in accordance with 904.~~ Structure backfill shall be in accordance with one of the following gradations *or No. 8, No. 9, No. 11, No. 53, or No. 73 coarse aggregate in accordance with the gradation requirements of 904.03(e). Coarse aggregate No. 8, No. 9, No. 11, No. 53, or No. 73 shall be crushed stone or ACBF, class D or higher.*

Other sections containing  
specific cross references:

204.02, Pg 200-44, 211.02, Pg 200-70  
714.02, Pg 700-102, 715.02, Pg 700-106  
717.02, Pg 700-121, 718.02, Pg 700-125  
719.02. Pg 700-129

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

714-R-437  
717-R-152  
723-R-282  
723-R-282f

Standard Sheets potentially affected:

211-BFIL-01 thru 05  
714-BCEX-01 and 02  
715-BKFL-01 thru 12

Motion: Mr. Heustis  
Second: Mr. Walker  
Ayes: 9  
Nays: 0

Action: Passed as submitted  
Effective: March 2007 Letting  
x 2008 Standards Specifications Book  
\_\_\_ 2008 Standards Edition

Received FHWA Approval? Yes

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 906, AFTER LINE 97, INSERT AS FOLLOWS:

**5. Neoprene Sheeting**

*Neoprene sheeting shall be general purpose, heavy duty with nylon fabric reinforcement. The neoprene sheeting shall be in accordance with the test requirements as follows:*

<i>Test Description</i>	<i>ASTM Method</i>	<i>Requirement</i>
<i>Thickness</i>	<i>D 751</i>	<i>0.10 in. ± 0.01 in. (25 mm ± 0.3 mm)</i>
<i>Minimum Breaking Strength, Grab, W x F</i>	<i>D 751</i>	<i>700 lb x 700 lb (3120 N x 3120 N)</i>
<i>Minimum Adhesion, 1 in. wide Strip, 2 in. min. Pull</i>	<i>D 751</i>	<i>6 lb min. (27 N min.)</i>
<i>Minimum Burst Strength (Mullen)</i>	<i>D 751</i>	<i>1.40 ksi min. (9.65 MPa min.)</i>
<i>Heat Aging, 70 h, Temp. 212°F (100°C), 180 deg Bend, without cracking</i>	<i>D 2136</i>	<i>No Cracking of Coating</i>
<i>Low-Temperature Brittleness, 1 h at -40°F (-40°C), Bend Around 1/4 in. (6 mm) Mandrel</i>	<i>D 2136</i>	<i>No Cracking of Coating</i>

Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

None

Standard Sheets potentially affected:

None

Motion: M  
 Second: M  
 Ayes:  
 Nays:

Action: Withdrawn. Will be resubmitted.



REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 906, AFTER LINE 255, INSERT AS FOLLOWS:

**906.08 High Density Plastic Bearing Strips**

*The strip shall be of multipolymer plastic and shall have the physical properties as follows:*

- (a) Compressive strength shall be 8000 to 9000 psi (55.2 to 62.1 kPa) in accordance with ASTM D 695.*
- (b) The material shall be nontoxic.*
- (c) The cold-flow characteristic at 1000 psi and 73°F (6.9 kPa and 22°C) shall be 1% in accordance with ASTM D 648.*
- (d) The coefficient of linear expansion shall be  $3.0 \times 10^{-5}$  in./in./°C to  $5.0 \times 10^{-5}$  in./in./°C ( $7.62 \times 10^{-4}$  mm/mm/°C to  $1.27 \times 10^{-3}$  mm/mm/°C) in accordance with ASTM D 696.*

Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_\_\_

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

None

Standard Sheets potentially affected:

None

Motion: M  
Second: M  
Ayes:  
Nays:

Action: Withdrawn. Will be resubmitted.

Item No. 17-1  
Ms. Rearick  
Date: 11/16/06

REVISION TO STANDARD DRAWINGS

205-TECD-02 Temporary Check Dam, Straw Bales

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Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

Standard Sheets potentially affected:

See Above

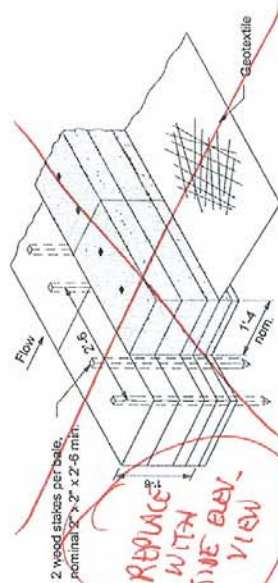
Motion: Ms. Rearick  
Second: Mr. Andrews  
Ayes: 10  
Nays: 0

Action: Passed as revised  
Effective: March 2007 Letting  
\_\_\_ 2008 Standards Specifications Book  
x 2008 Standards Edition

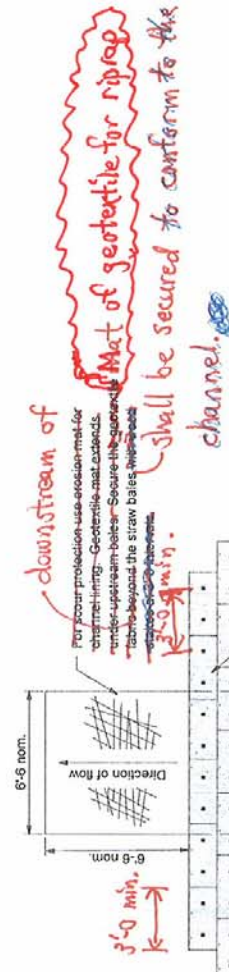
Received FHWA Approval? Yes

# GENERAL NOTES

1. Ditch checks shall be spaced such that the top of the downstream checks is at the same elevation as the toe of the adjacent upstream check dam.



REPLACE WITH SIDE ELEV. VIEW



downstream of

Mat of geotextile for riprap shall be secured to conform to the channel.



Plan View



Stagger joints between adjacent rows of bales.

Spillway low point



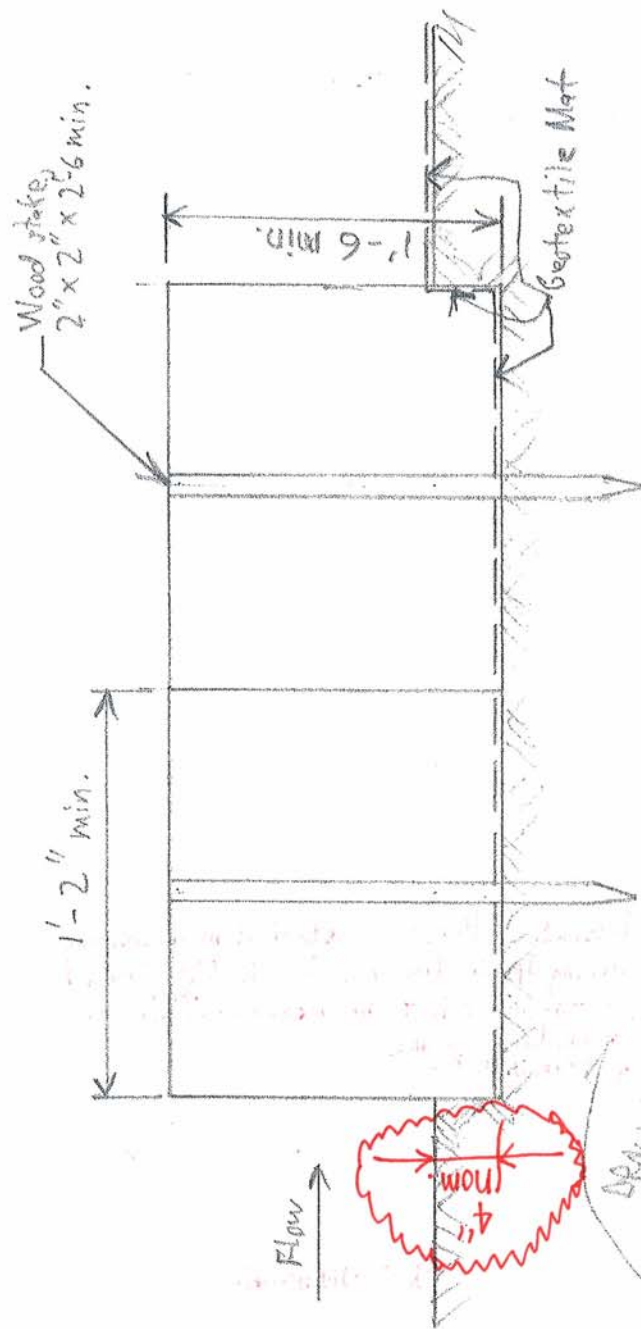
Stakes driven into soil where soil conditions permit

Front Elevation

Bottom elevation of end bale shall be equal to or greater than upstream middle bale.

Spillway low point.

INDIANA DEPARTMENT OF TRANSPORTATION	
TEMPORARY CHECK DAM, STRAW BALES	
MARCH 2005	
STANDARD DRAWING NO. E 205-TECD-02	
DESIGNED BY L. J. ROBERTS NO. 9750	CHECKED BY L. J. ROBERTS DATE
DRAWN BY L. J. ROBERTS DATE	GROUP ENGINEER DATE



Side Elevation

DRAW ANGLE  
SUCH THAT  
1'-2" DIMEN.  
APPEARS SHORTER  
THAN 1'-6" DIMEN.

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 205, BEGIN LINE 20, DELETE FOLLOWS:

Straw bales shall ~~be a minimum of 14 in. by 18 in. by 36 in. (350 mm by 450 mm by 900 mm)~~ and shall not weigh less than 35 lb (16 kg). Bales shall be bound with wire or nylon twine.

The Committee determined that the method of measurement described in Recurring Special Provision 205-R-528 should be clarified such that the work is to be measured once along the bottom of the exposed upstream side of the check dam.

Other sections containing specific cross references:	General Instructions to Field Employees
	Update Required? Y___ N_ <u>x</u>
	By - Addition or Revision
None	Frequency Manual
	Update Required? Y___ N_ <u>x</u>
	By - Addition or Revision
Recurring Special Provisions potentially affected:	Standard Sheets potentially affected:
205-R-528	
Motion: Ms. Rearick	Action: Passed as submitted
Second: Mr. Andrews	Effective: March 2007 Letting
Ayes: 10	<u>x</u> 2008 Standards Specifications Book
Nays: 0	_____ 2008 Standards Edition

Received FHWA Approval? Yes

Item No. 17-3  
Mr. Heustis  
Date: 11/16/06

REVISION TO STANDARD DRAWINGS

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715-BKFL-01, Pipe Backfill Method 1, New Roadway, Trench  
715-BKFL-02, Pipe Backfill Method 1, New Roadway, Embankment  
715-BKFL-03, Pipe Backfill Method 1, Existing Roadway, Trench, HMA Pavement  
715-BKFL-04, Pipe Backfill Method 1, Existing Roadway, Trench, PCC Pavement  
715-BKFL-05, Pipe Backfill Method 1, Existing Roadway, Trench, Composite Pvmt.  
715-BKFL-06, Pipe Backfill Method 2, Commercial & Private Drives, Trench  
715-BKFL-07, Pipe Backfill Method 2, Commercial & Private Drives, Embankment  
715-BKFL-08, Pipe Backfill Method 3, Median Installation, Trench  
715-BKFL-09, Pipe Backfill Method 3, Median Installation, Embankment  
715-BKFL-10, Pipe Backfill Limit Determination

The above proposed standards are to replace the following existing standards  
715-BKFL-01 thru 12.

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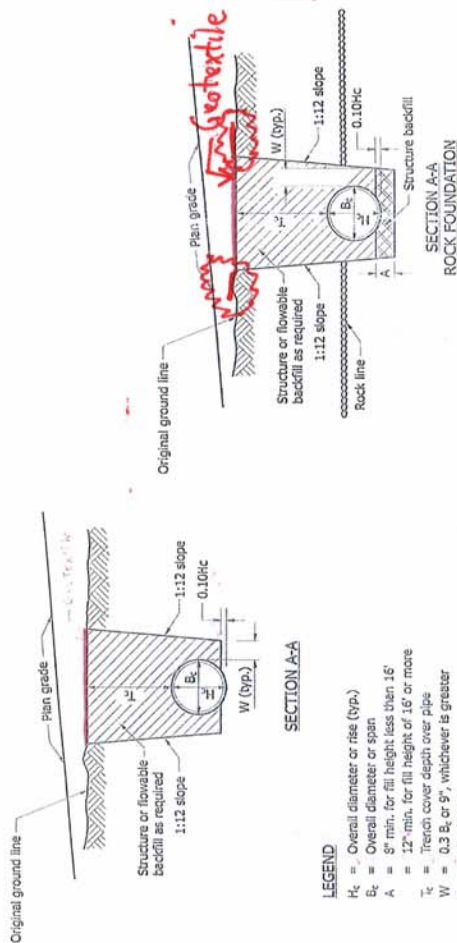
Other sections containing specific cross references:	General Instructions to Field Employees Update Required? Y___ N_ <u>x</u> By - Addition or Revision
None	Frequency Manual Update Required? Y___ N_ <u>x</u> By - Addition or Revision
Recurring Special Provisions potentially affected:	Standard Sheets potentially affected:  See Above
Motion: Mr. Heustis Second: Mr. Kuchler Ayes: 10 Nays: 0	Action: Passed as revised Effective: March 2007 Letting ___ 2008 Standards Specifications Book <u>x</u> 2008 Standards Edition

Received FHWA Approval? Yes

**NOTES:**

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
  - a.) 1.5' for  $B_t \leq 18"$
  - b.) 3' for  $18" < B_t \leq 54"$
  - c.) 4' for  $B_t > 54"$
2. For bedfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

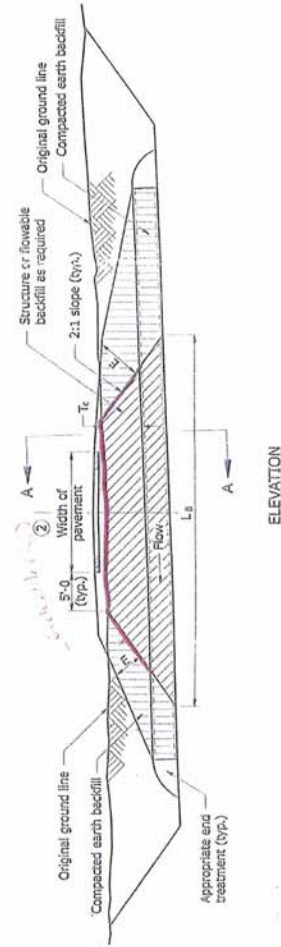
4. Geotextile required if coarse aggregate used. Geotextile shall extend 1 ft outside edge of the excavated trench.



**LEGEND**

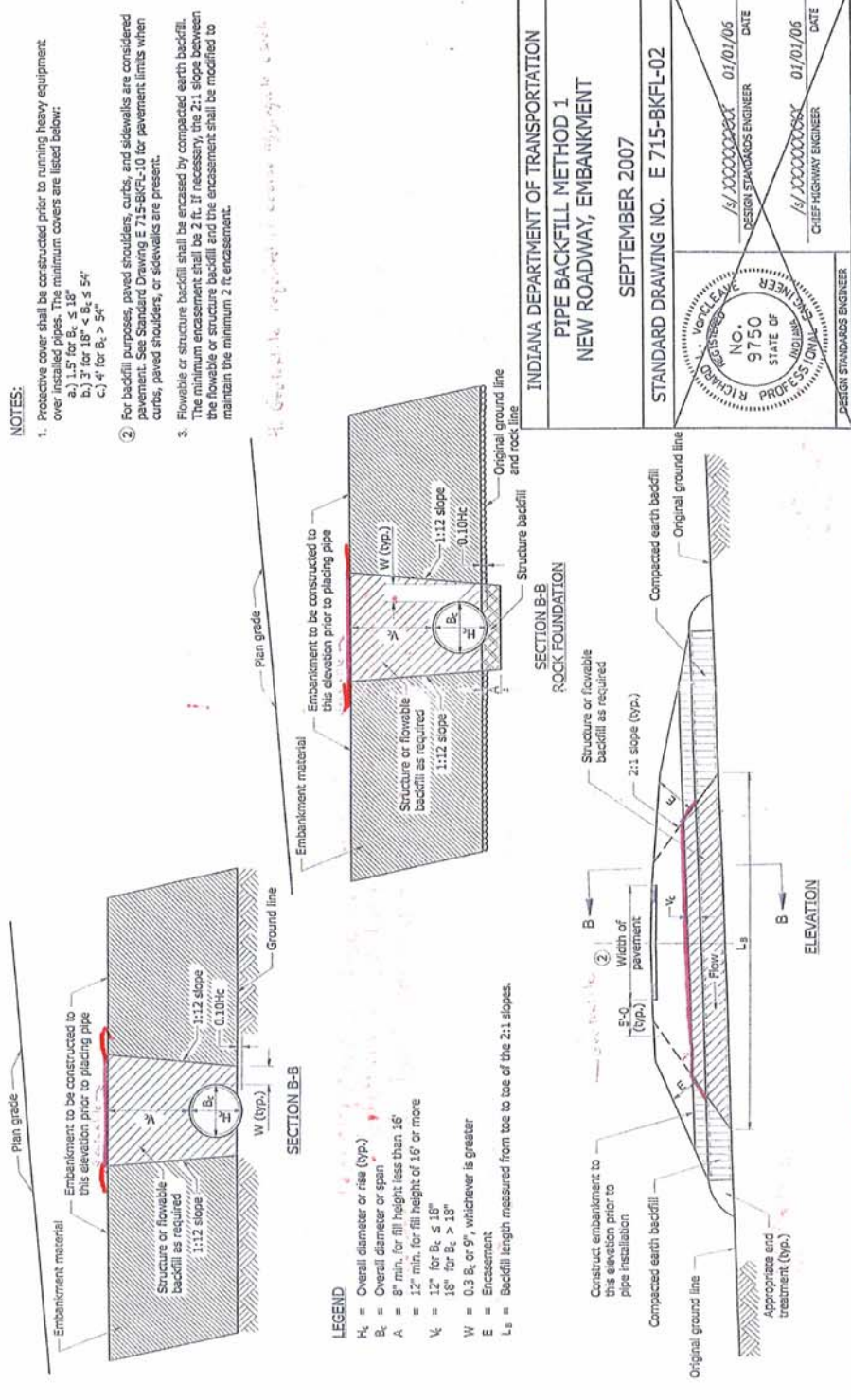
- $H_c$  = Overall diameter or rise (typ.)
- $B_t$  = Overall diameter or span
- $A$  = 8" min. for fill height less than 16'
- $A$  = 12" min. for fill height of 16' or more
- $T_c$  = Trench cover depth over pipe
- $W$  = 0.3  $B_t$  or 9", whichever is greater
- $E$  = Encasement
- $L_s$  = Backfill length measured from toe to toe of the 2:1 slopes.

INDIANA DEPARTMENT OF TRANSPORTATION	
PIPE BACKFILL METHOD 1	
NEW ROADWAY, TRENCH	
SEPTEMBER 2007	
STANDARD DRAWING NO. E 715-BKFL-01	
DESIGN STANDARDS ENGINEER /s/ XXXXXXXXX DATE 01/01/06	CHIEF HIGHWAY ENGINEER /s/ XXXXXXXXX DATE 01/01/06
DESIGN STANDARDS ENGINEER	

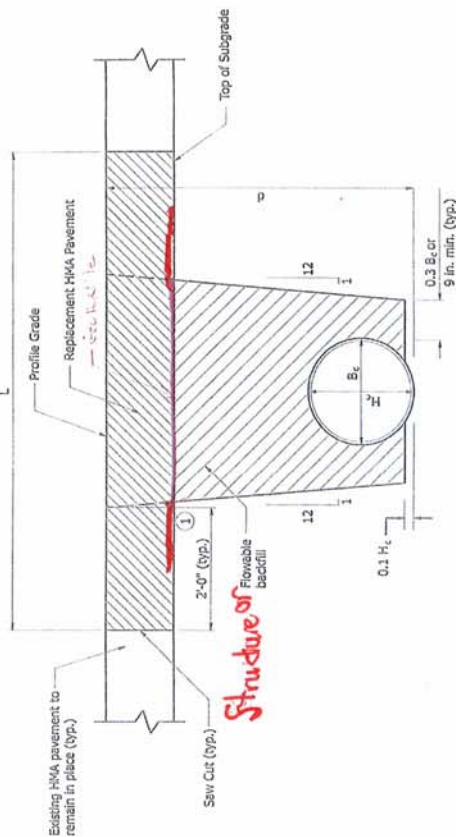


APPLIES ALSO TO DRUGS  
-02 THROUGH -09









# NOTES:

- Existing subgrade over this ~~distance~~ shall remain in place.
- The minimum pavement section shall be as follows:  
 165 #yd<sup>3</sup> HMA Surface, Type A, B, C, or D on  
 175 #yd<sup>3</sup> HMA Intermediate, Type A, B, C, or D on  
 variable-width base, Type A, B, C, or D
- If undrillable are present, they shall be removed in accordance with the details shown on Standard Drawing E 718-UNDR-01.
- See Standard Drawing E 715-BKFL-01 for pipe backfill trench elevation view.

5. Geotextile ...

- L = ~~length~~ pay limits of pavement removal and pavement replacement (ft)  
 Bc = Overall diameter or span (in.)  
 Hc = Overall diameter or rise (in.)  
 d = Vertical distance from flowline to profile grade (ft)

For cross pipe, measured along roadway centerline.  
 For pipe parallel to roadway centerline, measured perpendicular to pipe centerline.  
 HMA REPLACEMENT PAVEMENT

INDIANA DEPARTMENT OF TRANSPORTATION  
 PIPE BACKFILL METHOD 1  
 EXISTING ROADWAY, TRENCH

SEPTEMBER 2007

STANDARD DRAWING NO. E 715-BKFL-03

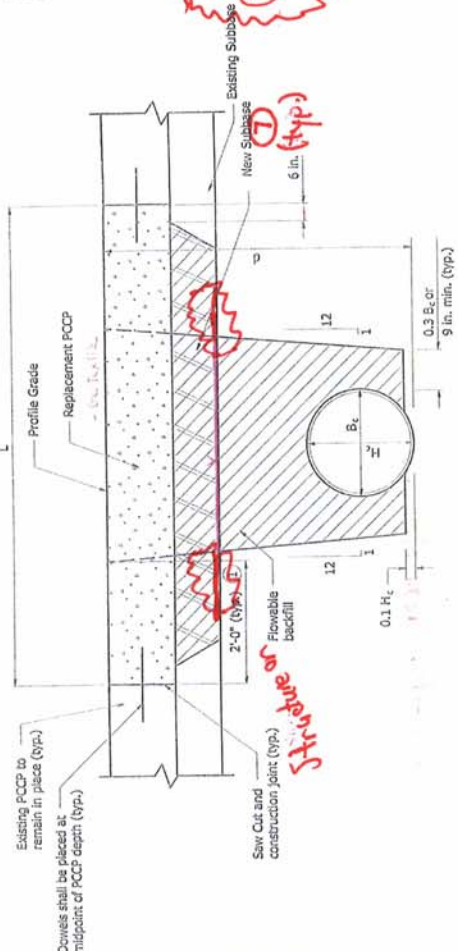
NO. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER RICHARD VOGLER	16/XXXXXXXXXX DESIGN STANDARDS ENGINEER DATE 01/01/06
	16/XXXXXXXXXX CHIEF HIGHWAY ENGINEER DATE 01/01/06

DESIGN STANDARDS ENGINEER

NOTES:

1. Existing subgrade over this ~~vertical~~ distance shall remain in place.
2. The thickness of the replacement PCP shall match that of the existing concrete pavement.
3. See Standard Drawing E 506-CQP-01 for subbase, dowels, and construction joint details.
4. If underdrains are present, they shall be perpetuated in accordance with the details shown on Standard Drawing E 718-UNDK-01.
5. See Standard Drawing E 715-BKFL-01 for pipe backfill trench elevation view.

6. Geotextile ...  
 ⑦ New subbase type shall match the existing subbase type.

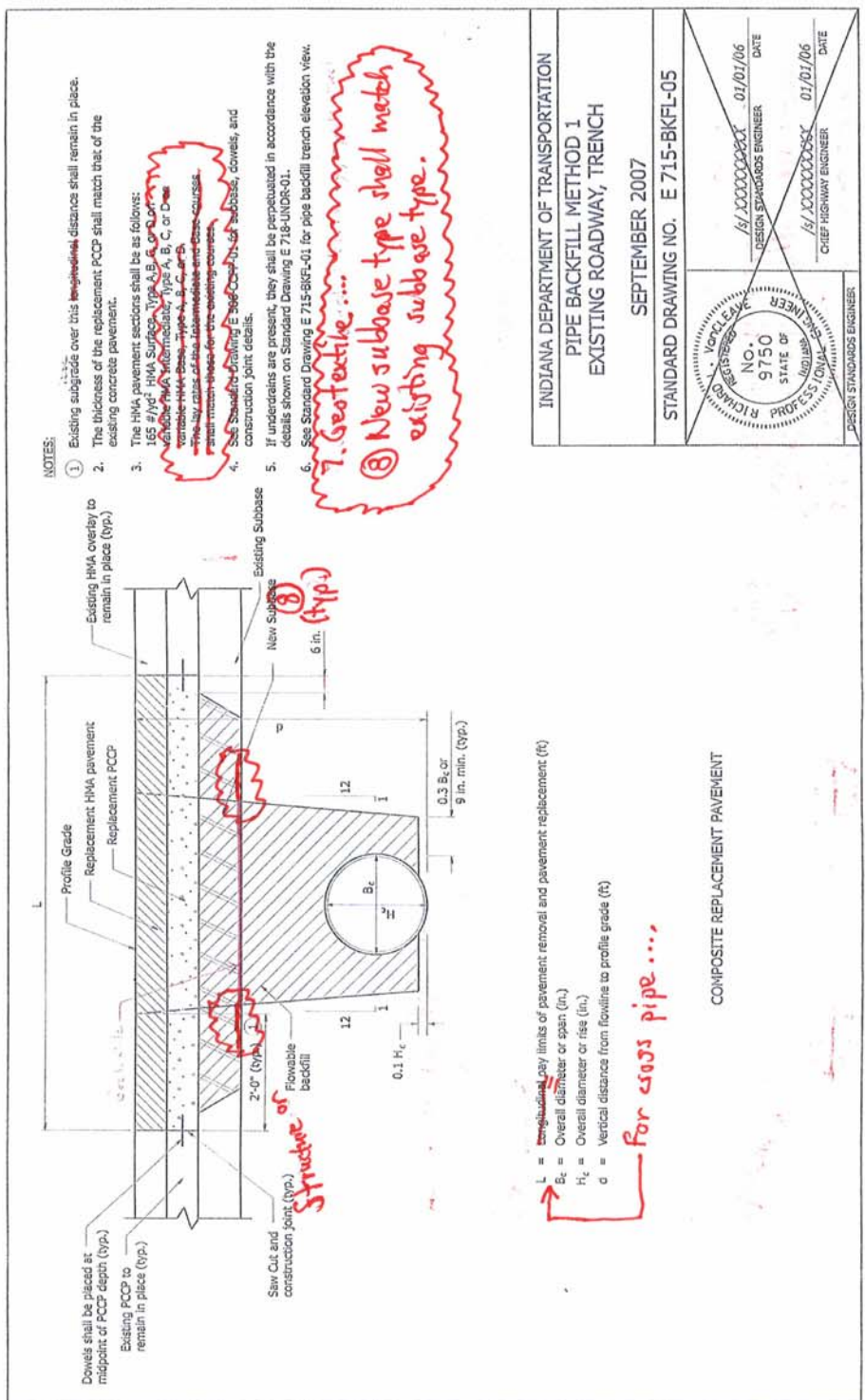


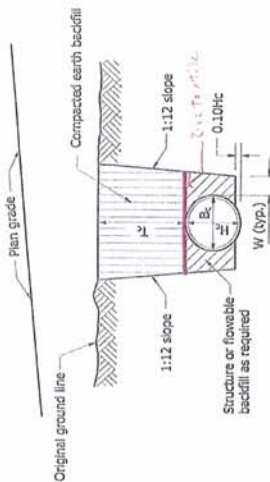
L = longitudinal lay limits of pavement removal and pavement replacement (ft)  
 B<sub>t</sub> = Overall diameter or span (in.)  
 H<sub>t</sub> = Overall diameter or rise (in.)  
 d = Vertical distance from flowline to profile grade (ft)

For cross pipe ...

PCCP REPLACEMENT PAVEMENT

I.T. OF TRANSPORTATION PIPE BACKFILL, METHOD 1 EXISTING ROADWAY, TRENCH SEPTEMBER 2007	
STANDARD DRAWING NO. E 715-BKFL-04	
DESIGN STANDARDS ENGINEER /s/ XXXXXXXXXX DATE 01/01/06	CHIEF HIGHWAY ENGINEER /s/ XXXXXXXXXX DATE 01/01/06
PROFESSIONAL ENGINEER NO. 9750 STATE OF ILLINOIS RICHARD J. [Name] DESIGN STANDARDS ENGINEER	

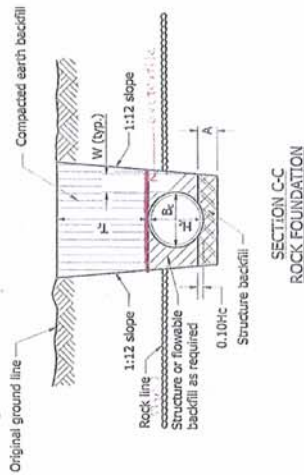




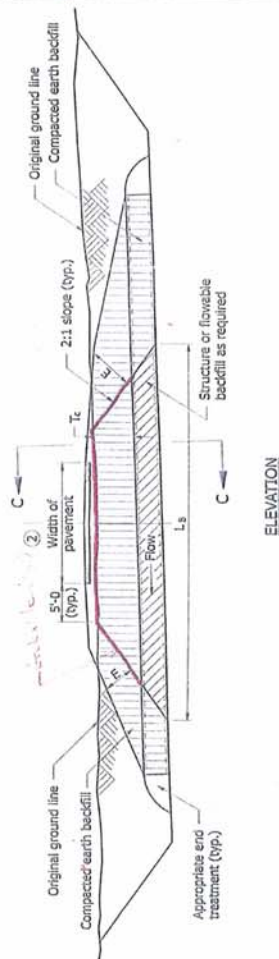
SECTION C-C

LEGEND

- $H_c$  = Overall diameter or rise (typ.)
- $B_c$  = Overall diameter or span
- $A$  = 8" min. for fill height less than 16"
- $T_c$  = 12" min. for fill height of 16" or more
- $W$  = Trench cover depth over pipe
- $E$  = 0.3  $B_c$  or 9", whichever is greater
- $E$  = Encasement
- $L_s$  = Backfill length measured from toe to toe of the 2:1 slopes.



SECTION C-C  
ROCK FOUNDATION



ELEVATION

NOTES:

1. Projective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
  - a) 1.5' for  $B_c \leq 18"$
  - b) 3' for  $18" < B_c \leq 54"$
  - c) 4' for  $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

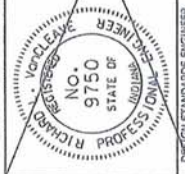
4. Encasement to be constructed in 2 ft lifts.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 2  
NEW ROADWAY TRENCH

SEPTEMBER 2007

STANDARD DRAWING NO. E 715-BKFL-06



DESIGN STANDARDS ENGINEER  
DATE 01/01/06

CHIEF HIGHWAY ENGINEER  
DATE 01/01/06

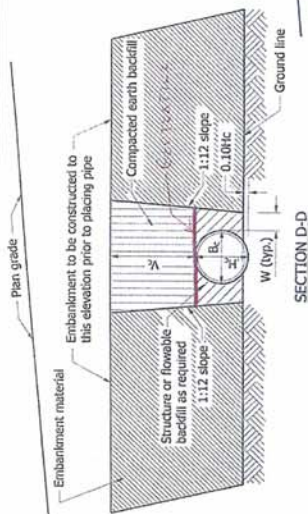
DESIGN STANDARDS ENGINEER



**NOTES:**

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
  - a) 1.5' for  $B_c \leq 18"$
  - b) 3' for  $18" < B_c \leq 54"$
  - c) 4' for  $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-BKFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.
3. Flowable or structure backfill shall be encased by compacted earth backfill. The minimum encasement shall be 2 ft. If necessary, the 2:1 slope between the flowable or structure backfill and the encasement shall be modified to maintain the minimum 2 ft encasement.

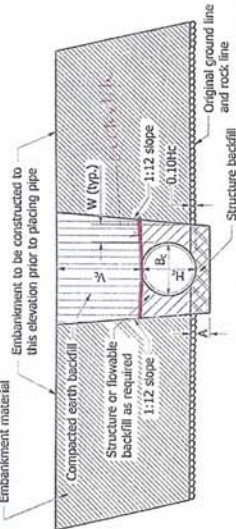
*4. Geotextile required if pipe is aggregate covered.*



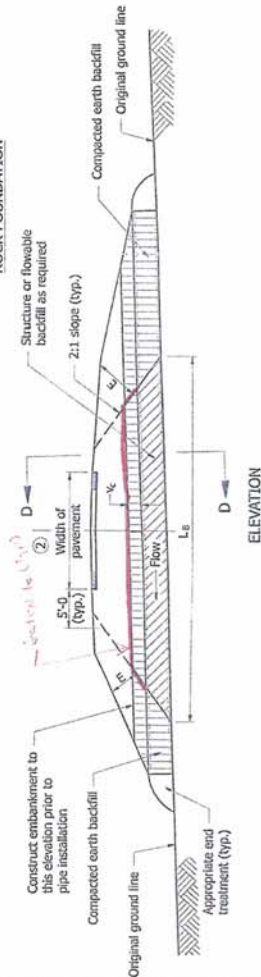
SECTION D-D

**LEGEND**

- $H_t$  = Overall diameter or rise (typ.)  
 $B_c$  = Overall diameter or span  
 $A$  = 8" min. for fill height less than 16"  
 $A$  = 12" min. for fill height of 16' or more  
 $W$  = 12" for  $B_c \leq 18"$   
 $W$  = 18" for  $B_c > 18"$   
 $W$  = 0.3  $B_c$  or 5", whichever is greater  
 $E$  = Encasement  
 $L_a$  = Backfill length measured from toe of the 2:1 slopes.



SECTION D-D  
ROCK FOUNDATION



INDIANA DEPARTMENT OF TRANSPORTATION

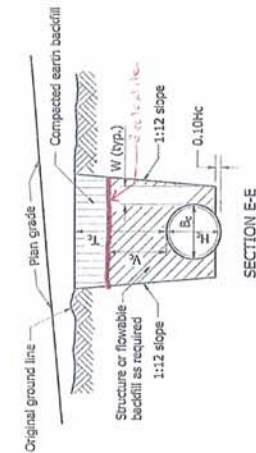
PIPE BACKFILL METHOD 2

NEW ROADWAY, EMBANKMENT

SEPTEMBER 2007

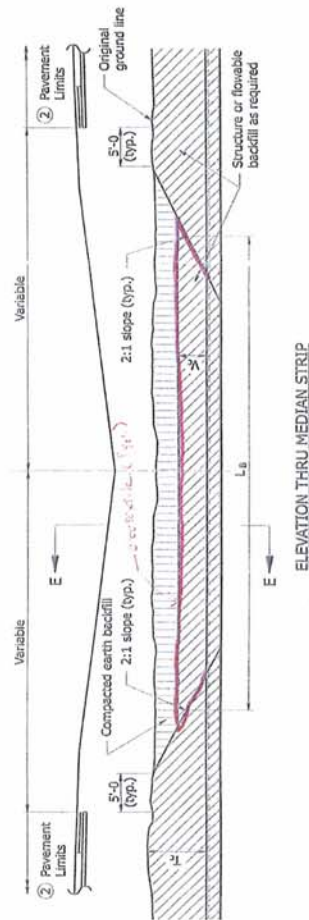
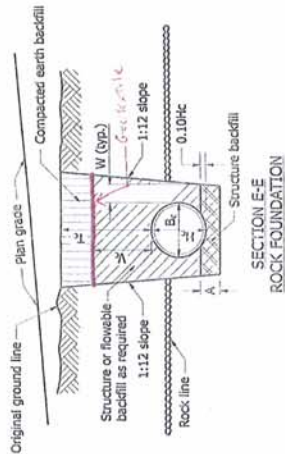
STANDARD DRAWING NO. E 715-BKFL-07

NO. 9750 STATE OF INDIANA PROFESSIONAL ENGINEER	DESIGN STANDARDS ENGINEER /s/ XXXXXXXX DATE 01/01/06
	CHIEF HIGHWAY ENGINEER /s/ XXXXXXXX DATE 01/01/06



#### LEGEND

- $H_c$  = Overall diameter or rise (typ.)
- $B_c$  = Overall diameter or span
- $A$  = 6" min. for fill height less than 16'
- $V_c$  = 12" min. for fill height of 16' or more
- $V_c$  = 12" for  $B_c \leq 18"$
- $V_c$  = 18" for  $B_c > 18"$
- $T_c$  = Trench cover depth over pipe
- $W$  = 0.3  $B_c$  or 9", whichever is greater
- $E$  = Easement
- $L_s$  = Backfill length measured from toe to toe of the 2:1 slopes.



#### NOTES:

1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:
  - a) 1.5' for  $B_c \leq 18"$
  - b) 3' for  $18" < B_c \leq 54"$
  - c) 4' for  $B_c > 54"$
2. For backfill purposes, paved shoulders, curbs, and sidewalks are considered pavement. See Standard Drawing E 715-9KFL-10 for pavement limits when curbs, paved shoulders, or sidewalks are present.

INDIANA DEPARTMENT OF TRANSPORTATION

PIPE BACKFILL METHOD 3  
NEW ROADWAY, TRENCH

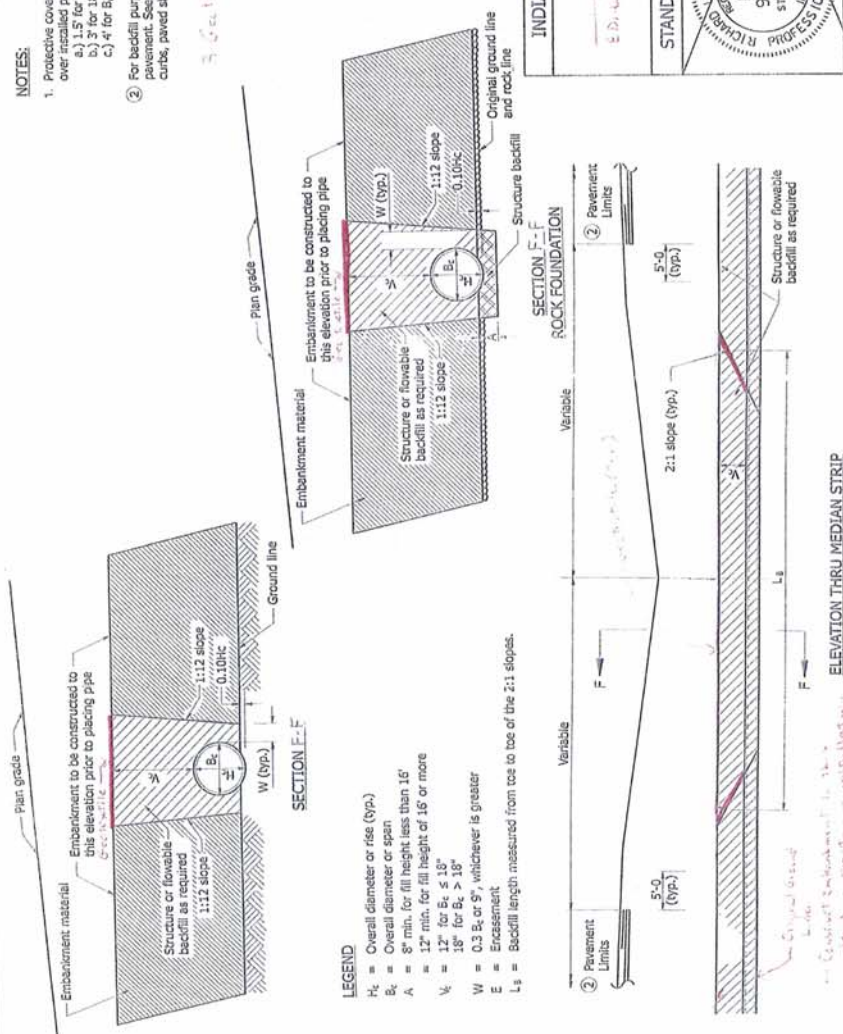
SEPTEMBER 2007

STANDARD DRAWING NO. E 715-BKFL-08

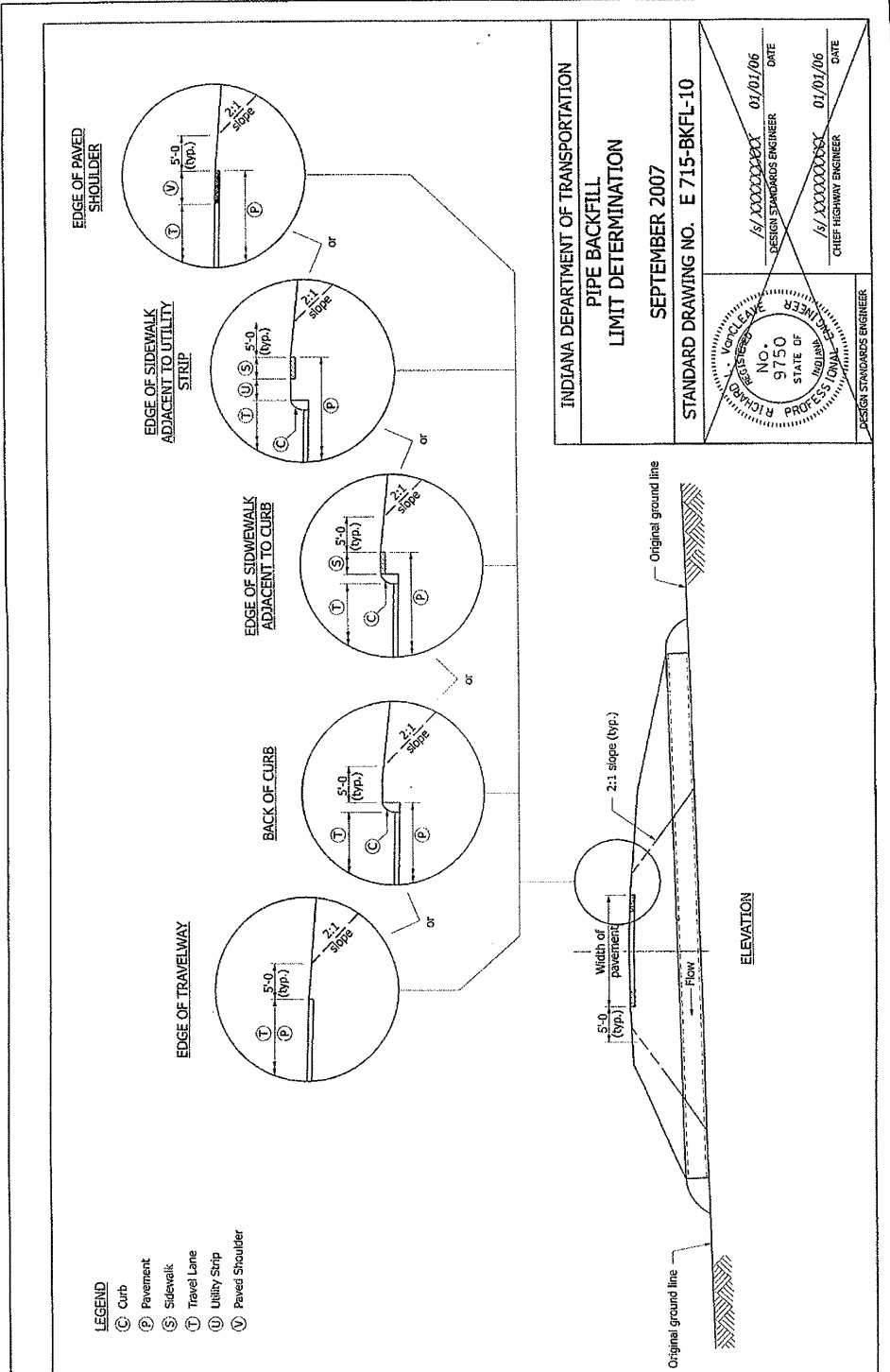
	/s/ Richard L. VanCleave DESIGN STANDARDS ENGINEER	03/01/05 DATE
	/s/ Richard K. Shultzer CHIEF HIGHWAY ENGINEER	03/01/05 DATE

1.1. Protective cover shall be constructed prior to running heavy equipment over installed pipes. The minimum covers are listed below:

- a.)  $1.5'$  for  $B_c \leq 18'$
- b.)  $3'$  for  $18' < B_c \leq 50'$
- c.)  $4'$  for  $B_c > 50'$



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REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 203, BEGIN LINE 73, DELETE AND INSERT AS FOLLOWS:

~~The Department will maintain a list of qualified wetland professional consultants. A wetland professional certified by the Society of Wetland Scientists, SWS, as a wetland professional in training or professional wetland scientists may also be utilized and a list of such scientists can be located at <http://www.wetlandcert.org/search.html>. The Department maintains a list of professional consultants who are prequalified to perform various types of work. A qualified wetland professional shall be a professional consultant who is prequalified with the Department to perform Environmental Services work type 5.4 Ecological Surveys, or is certified by the Society of Wetland Scientists, SWS, as a wetland professional-in-training or professional wetland scientist. The Department's list of prequalified professional consultants is located at <http://www.in.gov/dot/div/legal/rfp/eligiblefirms.xls>.~~

Other sections containing  
specific cross references:

None

General Instructions to Field Employees

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Frequency Manual

Update Required? Y\_\_\_ N\_x

By - Addition or Revision

Recurring Special Provisions  
potentially affected:

Standard Sheets potentially affected:

Motion: Mr. Cales  
Second: Mr. Keefer  
Ayes: 10  
Nays: 0

Action: Passed as revised  
Effective: March 2007 Letting  
x 2008 Standards Specifications Book  
\_\_\_ 2008 Standards Edition

Received FHWA Approval? Yes

REVISION TO 2006 STANDARD SPECIFICATIONS

SECTION 108, BEGIN LINE 270, INSERT AS FOLLOWS:

If the contract time is on a calendar day basis, it shall consist of the number of calendar days stated in the contract including all Sundays, holidays, and non-work days counting from the date of the notice to proceed. All calendar days elapsing between the effective dates of any orders to suspend work and to resume work for suspensions not the fault of the Contractor will be excluded. A weekly statement showing the controlling operation will be furnished. *The Contractor will be allowed one week from the date it receives the statement in which to file a written protest setting forth in what respect said weekly statement is incorrect. Otherwise, the statement will be deemed to have been accepted by the Contractor as correct.*

If the contract time is a fixed calendar date, it shall be the date on which all work on the contract shall be completed. For such contracts, an extended date of completion will be considered for delay in the issuance of the notice to proceed if the notice to proceed is not issued within 30 days of the letting, except if the delay is due to the failure of the Contractor to furnish requested forms or information. Unless otherwise determined, an extension to the contract completion date and intermediate completion date will be allowed for each calendar day from 30 days after the date of the letting to and including the date of the notice to proceed. A weekly statement showing the controlling operation will be furnished. *The Contractor will be allowed one week from the date it receives the statement in which to file a written protest setting forth in what respect said weekly statement is incorrect. Otherwise, the statement will be deemed to have been accepted by the Contractor as correct.*

Other sections containing specific cross references:	General Instructions to Field Employees Update Required? Y___ N_ <u>x</u> By - Addition or Revision
108.03 Pg. 100-72	Frequency Manual
108.09 Pg. 100-79	Update Required? Y___ N_ <u>x</u> By - Addition or Revision
Recurring Special Provisions potentially affected:	Standard Sheets potentially affected:
None	None
Motion: Mr. Kuchler Second: Mr. Heustis Ayes: 10 Nays: 0	Action: Passed as submitted Effective: March 2007 Letting <u>x</u> 2008 Standards Specifications Book ___ 2008 Standards Edition

Received FHWA Approval? Yes